

## LFU06 – SOP for Automated Fingerprint Identification System (AFIS)

### Table of Contents

1. Scope
2. Background
3. Safety
4. Materials Required
5. Standards and Controls
6. Calibration
7. Procedures
8. Sampling
9. Calculations
10. Uncertainty of Measurement
11. Limitations
12. Documentation
13. References

### 1. Scope

- 1.1. This procedure is utilized by authorized Latent Fingerprint Analysts as a function of their daily tasks in their current position. AFIS is an intelligence tool used to search unknown latent fingerprints found at crime scenes, or on items found at crime scenes, against a database of known fingerprints of persons previously arrested in the District of Columbia and surrounding regions (NOVARIS and RAFIS).

### 2. Background

- 2.1. To establish the practices for documenting the examination of evidence to conform to the requirements of the Department of Forensic Sciences (DFS) Forensic Science Laboratory (FSL) *Quality Assurance Manual*, the accreditation standards under ISO/IEC 17025:2017, and the supplemental standards set by the FSL's accrediting body.
- 2.2. The main function of the Automated Fingerprint Identification System (AFIS) for the LFU is to search the ten-print and palm print databases against latent prints recovered from crime scenes and unknown deceased prints. The system also enables analysts to retrieve known print records for comparison purposes. These functions are provided through the MorphoBIS Review Workstation, and the software also provides quality control, verification, database maintenance, record comparison, charting, descriptor data entry and FBI submission capabilities.

- 2.3. The Quality Control application performs quality control on fingerprints and palm prints and includes the ability to enhance an image when necessary to ensure the quality and clarity of the latent impressions while enabling the ability to select and un-select minutiae to be searched.
- 2.4. The Latent Fingerprint Analyst will encode minutiae, or ridge characteristics, on the latent fingerprint/palm print, and initiate a search of a latent print/palm print to the existing ten print/palm print or unsolved latent record file database. At the search completion, the Analyst will review search results onscreen, make Identification /Non Identification decisions, and save images onto the database.
- 2.5. Only qualified personnel will use AFIS. A list of authorized personnel will be maintained in the LFU. The LFU will keep up-to-date instructions for the use and maintenance of this equipment. The manufacturer's manuals for the Morphotrak MorphoBIS Workstation equipment will also be available to the appropriate personnel. (Refer to the FSL QAM)

### **3. Safety**

- 3.1. Not applicable

### **4. Materials Required**

- 4.1. Epson V700 Photo Flatbed Scanner
- 4.2. Infinity Camera
- 4.3. Quality Printer(s)
- 4.4. AFIS Latent Print Workstation (LPW)
- 4.5. FBI Integrated Automated Fingerprint Identification System Software (IAFIS)
- 4.6. IT connectivity for NOVARIS (Northern Virginia), RAFIS (Montgomery County and Prince George's County), and IAFIS (FBI)

### **5. Standards and Controls**

- 5.1. The high-resolution flatbed document scanner permits scanning a card at 500 dots per inch (dpi) for ten print cards and 500 dpi or 1000 dpi for latent prints.

### **6. Calibration**

- 6.1. Not applicable

## 7. Procedures

- 7.1. The Analyst and/or Supervisor is required to run a test case monthly to ensure that the computer operating conditions are working properly.
- 7.2. These procedures apply to authorized Latent Fingerprint Unit personnel with password access to utilize the Automated Fingerprint Identification System (AFIS) as a function of their current position.
  - 7.2.1. Authorized personnel are responsible for maintaining security of the System. Each Analyst is required to log off of the workstation when finished. Analysts shall only use AFIS when signed in under their own access code.
- 7.3. The Analyst is responsible for determining if the friction ridge print(s) will be searched in the Automated Fingerprint Identification System (AFIS).
  - 7.3.1. Once an AFIS search is conducted it must be documented in the corresponding worksheet/LIMS field.
- 7.4. Latent Entry:
  - 7.4.1. Add case and enter case ID.

Example of latent assigned case number; 110114123456  
representing the following codes:

- 11 – Agency Code
- 0 – Latent cases
- 1 – latent or submission #
- 14 – Year
- 123456 – CCN

NOTE: Analysts are not to create case IDs that do not correspond to a case number unless they are running a test print.

7.4.2. Edit Case Descriptors Area:

- Mandatory fields - Crime Type (Offense, if known), Location (District, if known) and Agency (MPD or DFS or other submitting agency).

- Optional fields – Date, Victim, Description and Category.

#### 7.4.3. Capture Latent Image:

- 7.4.3.1. Images will be captured using the scanner or camera or they will be imported.
- 7.4.3.2. Calibrate Image and correct DPI (if applicable) using the “Set Ruler” tool.
  - 7.4.3.2.1. Images that are scanned into the system will not need to be calibrated since they are 1:1. Images captured by the camera and images imported from a disk or an image repository system will need to be calibrated to ensure they are 1:1.

#### 7.4.4. Add Latent:

- 7.4.4.1. Enhance Image if needed using enhancement tools available.
  - 7.4.4.1.1. Enhancement features are used at the Analyst’s discretion.
- 7.4.4.2. Encode Minutiae - Analyst will use either manual encode or use the automatic features (Auto-code) to select the minutia that will be used in the search.
  - 7.4.4.2.1. Encoding features are used at the Analyst’s discretion; at this point the Analyst can select or un-select points used to search the print.

#### 7.5. Latent Search Submission:

##### 7.5.1. Selected Search Parameters:

- Priority – Low
- Rotations – 3
- Add – Yes
- Number of candidates – 10

- Check “Ten Print” Box
  - Also check the “Latent” Box when searching Deceased Prints
- Additional search filters (sex, race, YOB) are optional

7.5.2. Selected Databases to Search:

- TPF- search against ten prints
- ULF- search against unknown latent fingerprints (If applicable)
- PALM - search against known palm prints
- ULP - search against unknown latent palm prints

7.5.3. Selected Extra Databases to Search via “Searches”:

- FBI LFFS
- FBI LFIS
- NOVARIS (Northern Virginia Regional Identification System)
- RAFIS (Montgomery County & Prince George’s County Police Departments)

7.5.4. **Save and Submit Search** - the image is submitted for search

7.6. Verification:

- 7.6.1. After completion of the case search against the database, the case is sent to the Latent Search Verification for verification by the Analyst.
- 7.6.2. A return list of 10 or more candidates will appear, depending on database searched. The Analyst will perform a visual side by side comparison with the latent print and the known print of the respondent on the screen. The analyst will compare all respondents in the candidate list unless an identification is rendered, in which case the Analyst may cease their review of the remaining respondents in the candidate list.

- 7.6.3. For Non-Identification results, the Analyst will disposition the case as NON IDENT.
- 7.6.4. For Identification results, the Analyst will disposition the case as IDENT and retain a copy of the Latent vs. Tenprint or Palm Print screen showing the match and place this in the case folder.
- 7.6.5. For unidentified latent prints, the print shall be retained on the AFIS database as an Unsolved Latent Image.
- 7.7. Deceased Verification:
  - 7.7.1. For deceased print entries, where the analyst is searching the Ten Print database to verify the identity or identify a deceased person, follow the same procedure outlined in 7.4.
- 7.8. Reverse Searches:
  - 7.8.1. This tool is used to attempt to close unsolved latent cases. There may be instances where a newly entered known print “hits” on an Unsolved Latent Image that was not identified on a previous case search. The analyst assigned to the original case is responsible for verifying any reverse searches.
    - 7.8.1.1. If an identification is determined, the analyst will follow standard procedures for reporting the result.
- 7.9. Tenprint / Palm Print Card Retrieval:
  - 7.9.1. Click FIND, then Database Maintenance.
  - 7.9.2. Type in the PDID# preceded by a percent symbol (%) and click search.
    - 7.9.2.1. If a request has a known suspect, the PDID will be listed on the request form.
  - 7.9.3. Retrieve the most recent or clear quality print card(s) for comparison — ten print and/or palm print.
  - 7.9.4. Click print to retrieve the print card(s).

## 8. Sampling

- 8.1. Not applicable

## 9. Calculations

- 9.1. Not applicable

## 10. Uncertainty of Measurement

- 10.1. When quantitative results are obtained, and the significance of the value may impact the report, the uncertainty of measurement must be determined. The method used to determine the estimation of uncertainty can be found in the *FSL Quality Assurance Manual – Estimation of Uncertainty of Measurement*.
- 10.1.1. Given that no quantitative results are obtained using AFIS, this is not applicable.

## 11. Limitations

- 11.1. Several factors have to be considered when determining the print(s) to be entered in a case, such as the quality/clarity, quantity of the minutiae(s) and orientation of the impression.
- 11.2. The latent print that is entered into the system must be “of value”. Not all prints are suitable for entry into AFIS.
- 11.3. It is an Automated Fingerprint Identification System (AFIS) requirement to plot a minimum of eight level 2 features in a friction ridge print to conduct a search.

## 12. Documentation

- 12.1. LFU Examination Worksheets
- 12.2. Copy of Latent Print
- 12.3. Copy of Latent Evidence Envelope
- 12.4. Copy of Latent vs. Tenprint or Palmprint Identification Screen
- 12.5. LFU Report of Examination
- 12.6. Schedule of Analysis (if applicable)

## 13. References

- 13.1. Safran Morpho MorphoBIS Version 2.0 Review Workstation User Guide
- 13.2. Forensic Science Laboratory Quality Assurance Manual {DCN 1300}  
(Current Version)
- 13.3. DFS Departmental Operations Manual (Current Version)
- 13.4. FSL Laboratory Operations Manual (Current Version)